

THE OCCURRENCE OF PESTIFEROUS *VESPULA* SPP. IN NORTHERN DELAWARE (HYMENOPTERA: VESPIDAE)^{1,2}

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ABSTRACT: Yellowjacket wasps in the genus *Vespula* are often prominent pests in public parks, recreation areas and around homes in Delaware. *Vespula maculifrons* Buysson was the most abundant of the 7 species collected in a survey of such habitats in northern Delaware and Maryland. It composed 90-100% of the samples from parks and recreation areas and 84% of those from around residences.

DESCRIPTORS: *Vespula maculifrons*, *Vespula germanica*, residential and recreational areas, Delaware, yellowjackets

The pestiferous habits of wasps in the genus *Vespula* have led to increased investigations into their biological and ecological characteristics in recent years (Spradberry, 1973; Akre, 1975; MacDonald, 1973, 1974, 1975). However, little has been published concerning species occurring in the northeastern United States. Preiss (1968) conducted an investigation of the habitat parameters of *Vespula maculifrons* Buysson in an urban Delaware woodlot, and Eickwort (pers. comm.) has completed a recent study on the distribution of *Vespula germanica* Fabricius in New York State. This note reports the results of a survey conducted during 1976 in northern Delaware and northeastern Maryland to determine the relative abundance of *Vespula* spp. in public parks, recreation areas and around residences. These are areas where contact with man results in the wasps' pestiferous behavior.

Methods

Weekly sweep net collections were made around garbage cans and picnic tables in six public parks during July, August and September 1976 (Table 1). Extensive areas were repeatedly sampled in each location to secure representative samples of wasps present.

Responses to an Extension Service press release requesting locations of ground nests of yellowjackets plus the usual inquiries made to Extension

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personnel in the Department of Entomology and Applied Ecology served as a source for the residential survey. The residential survey was limited to a 13 km (8 mile) radius of Newark, Delaware. The residential nest survey concerns only ground nesting species.

Species identifications are based on the taxonomic keys of Miller (1961) and Menke and Snelling (1975).

Results and Discussion

Seven species of *Vespula* wasps were collected. *Vespula maculifrons*, a subterranean nester, was the dominant species. In 5 of the 6 recreational areas examined *V. maculifrons* comprised 90-100% of the populations sampled (Table 1). *Vespula germanica*, a recently established immigrant from Europe (Menke and Snelling 1975), initially appeared as the dominant species in Carpenter Park. Subsequent collections, however, revealed a decrease in the *V. germanica* population with an increase in the occurrence of *V. maculifrons*. Carpenter Park is the only collection site located on the Piedmont. The other areas sampled are on the Coastal Plain. Examination of the overall species composition of the sample areas clearly illustrates the abundance of *V. maculifrons* in park and recreational areas in Delaware.

Of the 32 subterranean nests examined in residential areas during the 1976 survey, 27 (84%) were of *V. maculifrons*. The remaining 5 (16%) were of *V. squamosa* Drury. *Vespula maculifrons*, therefore, may also be considered a major pestiferous species for homeowners in northern Delaware.

In addition to the subterranean nests I also found nests of *V. maculifrons*, *V. squamosa*, and *V. germanica* within the walls and attics of several homes in the survey area. *Vespula germanica* was the most abundant species in these sites.

The presence of several species of wasps in habitats closely associated with human activity results in numerous unpleasant encounters. The identification of the dominant species present in these situations is an important aspect of the management, control, and avoidance of these insects.

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Table 1. Occurrence of *Vespula* spp. in parks and recreation areas expressed as percent of total collection per day per park

Location	Species	Percent Occurrence					
		31 July	6 August	13 August	20 August	2 September	
Rittenhouse Park, Newark, DE	<i>V. maculifrons</i>	100	100	100	100	100	
Lums Pond State Park 14 km S of Newark, DE	<i>V. maculifrons</i>	100	100	100	100	100	
Blackbird State Forest Blackbird, DE	<i>V. maculifrons</i>	100	100	100	100	100	
Killen Pond State Park 5 km SE of Felton, DE	<i>V. maculifrons</i>	100	86	93	91	88	
	<i>V. squamosa</i>	0	14	7	5	12	
	<i>V. maculata</i>	0	0	0	4	0	
Walter S. Carpenter State Park 6.5 km N of Newark, DE	<i>V. maculifrons</i>	15	54	74	57	97	
	<i>V. squamosa</i>	19	27	10	29	0	
	<i>V. germanica</i>	44	5	7	14	3	
	<i>V. vidua</i>	7	3	7	0	0	
	<i>V. arenaria</i>	15	11	0	0	0	
	<i>V. maculata</i>	0	0	2	0	0	
Elk Neck State Park 13 km S of North East, MD	<i>V. maculifrons</i>	75	90	100	100	100	
	<i>V. squamosa</i>	12	0	0	0	0	
	<i>V. vulgaris</i>	12	0	0	0	0	
	<i>V. arenaria</i>	0	10	0	0	0	

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BOOK RECEIVED AND BRIEFLY NOTED

A REVISION OF NORTH AMERICAN BEES OF THE SUBGENUS CNEMIDANDRENA (HYMENOPTERA: ANDRENIDAE). Barry J. Donovan. University of California Press. 1977. 107 pgs., incl. figs. and maps. \$4.75.

This systematic revision of the New World *Cnemidandrena* validates 26 North American species. Included also is a brief discussion of the relationships of some of the New World representatives with those of the Old World.